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etiological field and has received the support of so many men of wide experience that it can not be now entirely disregarded; but certainly it need not be accepted with so complete a dogmatism as to prevent investigation along other suggestive lines.

The theory of Sambon has interested me greatly, and it seems that now, when this theory has been elaborated so much more in detail, it is well worthy of serious attention at the hands of American students and investigators.

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## FLEAS COLLECTED FROM SQUIRRELS FROM VARIOUS PARTS OF CALIFORNIA.

By GEORGE W. MCCOY, Passed Assistant Surgeon, and MAURICE B. MITZMAIN, Assistant, Plague Laboratory, United States Public Health and Marine-Hospital Service.

During the past few months ground squirrels (*Citellus beecheyi*) have been received at the plague laboratory at San Francisco from 17 counties in California. The majority of these squirrels had been shot by the employees of the service, but a few had been trapped and sent in alive. As the majority of fleas desert the host when the body becomes cold after death, comparatively few fleas were present upon the dead hosts. The examination of the squirrels for fleas is a matter requiring so much time and labor that only a small number of the rodents were combed.

The only host considered here is the California ground squirrel (*Citellus beecheyi*), but some of the squirrels were members of two varieties (<sup>a</sup>) of the species, *Citellus beecheyi douglasi* from Solano County, and *Citellus beecheyi fisheri* from some of the southern counties. These varieties differ chiefly from the type species *Citellus beecheyi* in the color markings of the pelage.

We would call attention to the fact that *Argopsylla gallinacea* (Westw.) End. is here reported for the first time from the California ground squirrel. This flea, which occurs rarely on the rat in California, is the normal parasite of the domestic fowl. It is fair to assume that the squirrels from which these fleas were removed were associated directly or remotely with chicken yards. The *A. gallinacea* was found on several of the squirrels in great numbers, and strange to say, was always found on the head, especially in the region of the mouth and eyes.

We take occasion also to call attention to the presence of *Otenopsyllus musculi* (Duges) Wag. on the ground squirrel. This is the blind flea of the mouse and rat. It has heretofore been recorded from the squirrel under conditions of experimental transference from rats to squirrels, but we have here the first record of the occurrence of *Ot. musculi* in nature. It was obtained from two counties.

*Hoplopsyllus affinis* Baker and *Spilopsyllus inaequalis* Baker are rabbit fleas and their accidental presence on ground squirrels is easily accounted for.

It will be noted that *Ceratophyllus acutus* Baker predominates on the squirrels from every county. It has been previously shown, experimentally, that this flea is capable of transferring plague from one squirrel to another.

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<sup>a</sup> We are indebted to Prof. Joseph Grinnell, of the Department of Mammalogy of the University of California, at Berkeley, for the identification of these varieties.

*Fleas collected from live squirrels.*

County.	<i>C. acutus.</i>		<i>H. anomalous.</i>	
	M.	F.	M.	F.
Merced.....	12	21	4	5
Santa Barbara.....	6	9	3	6
San Luis Obispo.....	4	16	4	14
Contra Costa.....	79	127		5
San Mateo.....	23	51		
Monterey.....	16	37	17	17
Santa Cruz.....	14	22	4	9
Alameda.....	20	39	4	12
Tulare.....	19	24	3	12
Santa Clara.....	7	20		

*Enumeration of fleas from dead squirrels.*

County.	<i>C. acutus.</i>		<i>H. anomalous.</i>		<i>Ct. musculi.</i>		<i>A. gallinacea.</i>		<i>H. affinis.</i>		<i>Sp. inæqualis.</i>	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Ventura.....	10	37	7	10		1		1				
Monterey.....	19	38	7	18					1			1
San Luis Obispo.....	17	69	3	3		1			1	5		
Contra Costa.....	17	50										
Santa Cruz.....	4	9										
Santa Clara.....		3										
Santa Barbara.....	11	46	1	3								
Tulare.....	5	21		2								
Fresno.....	16	38					19	192				
Mariposa.....	8	10		2				1				
Kern.....		1						10				
Merced.....	11	29	1	3			6	89				
San Joaquin.....	6	8										
San Mateo.....	61	155										
Solano.....	77	135	17	15								
Riverside.....	49	128	13	22								